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❖ Potential Sources of Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. As water travels over the land's surface and through the ground, it dissolves naturally occurring minerals (iron, manganese, lead), and in some cases radioactive material. It can also be polluted by animal waste and human activity. Contaminants that might be expected in untreated water include: biological contaminants (bacteria); inorganic contaminants (salts and metals); pesticides and herbicides; and organic chemicals (fuels, oils, and solvents). More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791. ☞

❖ Water Quality Monitoring

The Fort Lewis Public Works (PW) is pleased to provide you with the 2004 Annual Water Quality Report. This report provides a snapshot of the quality of water we provided during 2004, a description of where our water comes from, a list of potential sources of contamination, and a description of how we ensure that our water is safe to drink. This publication conforms to the provision in the Safe Drinking Water Act, requiring water utilities to provide this information annually. We are proud to report that our water meets all Federal and State drinking water standards. ☞



Stripping towers at the Sequelitchew Springs Water Treatment Plant on Fort Lewis. The towers remove carbon dioxide (CO₂), a naturally occurring gas in groundwater, to raise the pH of the water (on average from 6.7 to 7.4). This helps to prevent pipe corrosion within the water distribution system.

❖ Ensuring Safe Drinking Water for Fort Lewis

The Fort Lewis Public Works closely monitors our drinking water by collecting over 500 water samples per year. The samples are analyzed by a state certified laboratory to look for over 300 possible contaminants. Forty bacteriological samples a month are collected and analyzed to ensure that our treatment plant provides the highest quality of water possible. These results are distributed to various federal and state agencies. The water plant adds chlorine, fluoride, and polyphosphate to the water prior to entering the distribution system to ensure safe, bacteria free water. Chlorine is a disinfectant that kills any bacteria that might be present. Fluoride helps to prevent tooth decay and polyphosphate helps balance the pH of the water to reduce potential corrosion and leaching of metals (lead and copper) within the distribution system. In addition to these quality control checks and treatment procedures, Public Works also operates a Backflow Prevention Program which is designed to prevent contaminants from entering drinking water via cross-connections between the public water system and non-potable water system. The back-flow assemblies are inspected annually to ensure they are working properly. Fort Lewis also operates a wellhead protection program which reviews all proposed activities within the established wellhead protection areas to ensure they do not pose a threat to our source waters. These are just a few of the measures taken to ensure our water is safe to drink. In the event a water sample exceeds safe drinking water limits, Fort Lewis Public Works will shut down the system and notify all consumers. The contaminant source would be identified and the problem fixed. Upon assurance that the water is again safe, consumers would be notified and informed of the cause of the problem. The Fort Lewis system has never been required to shut down due to contamination ☞

❖ Drinking Water Sources



Fort Lewis operates four public water systems, all of which rely entirely on groundwater. Groundwater is an excellent source of drinking water because of the natural filtration process that takes place. The main cantonment system, Public Water System Identification Number (PWSID: 26050), supplies water to over 30,000 people in the cantonment area on Fort Lewis. The primary source is Sequelitchew Springs. Six other wells around the post are available for use during peak demand periods. These sources produced 1.65 billion gallons of clean water last year. The other three systems include the Golf Course (PWSID: 462312), the Ammo Supply Point (PWSID: 46241A), and the Range 17 (PWSID: AB008D) Small Water Systems. Each is severed with by a single well with the exception of the Ammo Supply Point, which has two water wells. ☞

❖ Microbiological Testing

Microbial pathogens such as *Giardia lamblia*, *Cryptosporidium* and *fecal coliform* bacteria are found predominantly in surface and standing waters. Because the Fort Lewis Water System relies solely on groundwater sources, this threat is greatly reduced. The disinfection treatment process (chlorine addition) used on Fort Lewis water is very effective in eliminating residual organisms. With the treatment process, extensive microbiological testing, and monitoring, Fort Lewis Public Works is able to protect the public from diseases caused by these organisms. The Safe Drinking Water Act requires unfiltered water systems to meet strict standards for total and fecal coliform bacteria. Testing for these bacteria before and after disinfection helps confirm the effectiveness of the disinfection process. ☞

❖ Chlorine Residual and Disinfection

The disinfection process is closely monitored for chlorine residual, which is necessary to maintain adequate disinfection levels while in the distribution system. The process is monitored for its effectiveness in eliminating bacteria. The levels must be effective in eliminating bacteria but not too high as to cause an undesirable taste. The Stage 1 Disinfectant and Disinfection Byproduct Rule was established by EPA and requires Public Water systems to monitor for two groups of byproducts, Total trihalomethanes (TTHM) and Haloacetic acids (HAA5). All samples collected in 2004 were well below the EPA established limits (the results are located on page 3). For more information on this rule, visit: <http://www.epa.gov/OGWDW/mdbp/dbp1.html> ☞

❖ Special Concerns

Some people may be at a higher risk from contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Center for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791. ☞

❖ Lead, Copper, Arsenic

Lead and copper monitoring is conducted separately from other analyses and is an indirect measurement of the corrosivity of water relative to the materials in the distribution system. Fort Lewis water met the initial federal requirements for lead and copper concentrations in the distribution system thus reducing the required sampling frequency to 35 samples once every three years. The most recent sampling event occurred in 2003. No results exceeded action limits for lead or copper. Recent improvements in our water treatment facility operation have lowered the acidity and reduced the corrosivity of the water. For more information regarding lead and copper, you can contact your local Department of Health at (253) 395-6750. All arsenic samples were under the recently lowered federal regulatory level 10 part per billion (ppb) or 0.01 parts per million (ppm) for safe drinking water. ☞

Analyte	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contaminant
Copper	90% of the homes tested had copper levels less than 0.31 ppm Max Detected 0.4 ppm	90% of the homes tested must have copper levels less than 1.3 ppm	0 ppm	Corrosion of household plumbing
Lead	90% of the homes tested had lead levels less than 2 ppb Max Detected 7 ppb	90% of the homes tested must have levels less than 15 ppb	0 ppb	

❖ Water Conservation

During the high-use summer months, the water supply at Fort Lewis often becomes strained. To ensure an adequate supply of water for personal use and fire protection, it is important to use this precious resource wisely. As Fort Lewis and the surrounding communities continue to grow, the demand for water is ever increasing along with the need for conservation. By implementing some of the tips listed, you can make a difference and help Fort Lewis to maintain an adequate drinking water supply and support its missions. Saving water starts with you! Don't be a drip, conserve Army water! ☞



❖ Indoor Water Conservation Tips

- Take short showers instead of baths. Turn off the water while shampooing or soaping.
- Don't let the water run while brushing your teeth or shaving.
- Wash only full loads of dishes and laundry.
- Check fixtures for leaks and report any problems immediately.

❖ Outdoor Water Conservation Tips

- Position your sprinkler so water is not running onto streets or other paved areas.
- Make sure your garden hose has a nozzle that allows you to stop the flow, rather than letting the water run continuously.
- Use drip irrigation or soaker hoses for trees, shrubs, and flower beds; use sprinklers just for lawns.

Analyte	Max Amount Detected	Max Contaminant Level (MCL)	Max Contaminant Level Goal (MCLG)	Potential Source of Contamination
EPA Primary				
Arsenic	2 ppb	10 ppb	<10 ppb	Natural Geology
Fluoride	1.1 ppm	2 ppm	<2 ppm	Additive
Nitrate	1.7 ppm	10 ppm	<10 ppm	Runoff
Toluene	0.8 ppb*	1000 ppb	<1000 ppb	Fuels and Solvents
Total Xylenes	1.4 ppb*	10000 ppb	<10000 ppb	
1,2,4-Tri-methylbenzene	1.2 ppb*	Not Established	<0.5 ppb	
Isopropylbenzene	0.9 ppb*	Not Established	<0.5 ppb	
EPA Secondary (aesthetic)				
Iron	1300 ppb**	300 ppb	<300 ppb	Natural Geology
Lead	2 ppb	15 ppb	<15 ppb	
Manganese	60 ppb**	50 ppb	<50 ppb	
Sulfate	12 ppm	250 ppm	<250 ppm	
Chloride	ND	250 ppm	<250 ppm	
State Regulated				
Conductivity	201 μmhos/cm	700 μmhos/cm	<50 μmhos/cm	Natural Geology
Color	10 CU	15 CU	<15 CU	
TDS	ND	500 ppm	<500 ppm	
Turbidity	8.4 NTU**	1 NTU	<1 NTU	
EPA Unregulated				
Chloroform	3.1 ppb	5.0 ppb	<5.0 ppb	Disinfectant byproduct

* Result from a single well collected in 2003. The well was re-sampled immediately and no contaminants were detected. Sampling error due to cross contamination is suspected.

** Exceedence of EPA secondary (aesthetic) MCL's and pose no health related risks.

DISINFECTION BYPRODUCTS	2004 Results (ppb)	MCL (ppb)
Total trihalomethanes (TTHM)	5.7	80
Haloacetic acids (five) (HAA5)	1.7	60

Microbiological Testing Results for 2004

Analyte	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Potential Source of Contaminant
Microbiological Analysis at Your Tap				
Microbiological Contaminant/ Total Coliform Bacteria	Zero samples tested positive for Coliform bacteria.	Coliform bacteria may be present in no more than 5% of monthly samples.	Zero bacteria detected.	Regrowth of soil bacteria in the distribution system.
Disinfection Residual/ Chlorine Residual	All samples had detectable chlorine residual	Not regulated at this time.		Chlorine is used as a disinfectant in the water treatment process.
Microbiological Analysis Before Treatment				
Total Coliform Bacteria	100% of our samples had fewer than 40 bacteria per 100 milliliters of water.	90% of samples Must have fewer than 100 bacteria per 100 milliliters.	Zero bacteria detected	Soil bacteria and animal feces.
Fecal Coliform Bacteria	100% of our samples had fewer than 20 bacteria per 100 milliliters of water.	90% of samples Must have fewer than 20 bacteria per 100 milliliters.	Zero bacteria detected	Animal feces.

❖ Detected Contaminants

None of the water quality samples collected during 2004 exceeded the primary drinking water maximum contaminant levels (MCL) established by the EPA or Washington State Department of Health (often more stringent than the EPA). ↗

❖ Important Definitions

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to human health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to human health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Secondary Maximum Contaminant Levels (SMCL): These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

Color Units (CU) - Color is a measurement that qualitatively relates the amount of dissolved materials and suspended matter present in a water sample.

Microohms per centimeter (μ mhos/cm) - Conductivity is an index of the flow of electrical current in a substance; it also is an indirect measurement of dissolved solids in water.

Nephelometric Turbidity Units (NTU) - Turbidity is a measurement of water clarity.

Total Dissolved Solids (TDS) - TDS is a measurement of the amount of dissolved solids in a water sample.

Parts per million (ppm) and Parts per billion (ppb) ↗

❖ Is the water safe to drink?

All Drinking water at Fort Lewis comes from groundwater sources and is treated to ensure it meets or exceeds all drinking water standards. Public Works tests the water frequently for physical, chemical, and biological parameters. As an added precaution, potable water is disinfected before it enters the distribution system. ☞

❖ Customers Views Welcome

This report contains important information, and we believe it is vital that it is readable and understandable. If you are interested in learning more about the water service and water quality on Fort Lewis or have any suggestions on how we could improve this report, please feel free to contact us. Questions about water quality can be answered by calling the Water Quality Technician at Fort Lewis Public Works at (253) 966-1772. ☞

❖ FREQUENTLY ASKED QUESTIONS

What are the potential health effects of contaminated water? Chronic (over a long period of time) exposure to contaminants is not likely, due to our extensive monitoring program. Acute (short period of time) exposure, such as the consumption of drinking water contaminated with crypto-sporidium, often results in diarrhea, abdominal pain, vomiting, and low-grade fever, similar to food poisoning.

Does Fort Lewis add fluoride to the water? Yes, Fort Lewis adds fluoride to the water.

Why does the water sometimes taste like chlorine? Fort Lewis uses chlorine for disinfection before water enters the distribution system. Chlorine has been shown to be a safe and effective agent used by most municipalities across the country. Sometimes, when the water has been sitting for some time in the pipe, some of the chlorine comes out of solution. When this happens, you may smell or even taste it; however, the water is still safe to drink.

Why does the water sometimes look rusty? Rusting of galvanized pipe in plumbing systems is the typical cause of discolored water. Iron causes the discoloration; it is not a health risk. If the cold water is discolored, it will clear after running a bit.

What are EPA secondary (aesthetic) regulated contaminants ? Secondary contaminants pose no health risk if consumed. They are regulated to ensure the aesthetic qualities of the water such as clarity and hardness. Hardness refers to dissolved minerals in the water (calcium and magnesium) that interfere with the sudsing action of soap. The harder the water, the less the sudsing action. The water you receive from Fort Lewis is very soft, which means that dish washing and clothes washing require less soap.

This report can be viewed on the Fort Lewis website at: <http://www.lewis.army.mil/waterreport/2004CCR.pdf>

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Water Quality Report****❖ WHERE TO GO FOR MORE INFORMATION**

Washington State Department of Health:

<http://www.doh.wa.gov/ehp/dw/default.htm>

Environmental Protection Agency (EPA):

<http://www.epa.gov>

EPA Safe Drinking Water Hotline: 800-426-4791